

## WHAT IS CLAIMED:

1. A detector comprising:
  - a housing with openings for at least an inflow of ambient atmosphere;
  - a filter carried in the housing;
  - an ambient condition sensor carried in the housing exposed to inflowing filtered, ambient atmosphere; and
  - a condenser carried in the housing between the inflowing ambient atmosphere and the sensor.
2. A detector as in claim 1 where the condenser comprises at least one of a plurality of high thermal conductivity members, a metal member, or, a semiconductor dehumidifier.
3. A detector as in claim 2 where the high thermal conductivity members are selected from a class which includes spheroids, plates, pyramids, three dimensional, non-planar, non-spheroidal shapes.
4. A detector as in claim 1 where the sensor is selected from a class which includes at least a gas sensor and a fire sensor.
5. A gas detector comprising:
  - a housing;
  - a filter;
  - a gas sensing chamber;
  - at least one gas entry port for the chamber;
  - a reflecting portion;
  - at least one condensing element separate from the reflecting portion, positioned at least partially between the gas entry port and the reflecting portion so as to cause water to condense thereon rather than condensing on the reflecting portion, the condensing element changes the temperature of at least some of the passing gas.
6. A detector as in claim 5 where the filter comprises a gas permeable filter.

7. A detector as in claim 6 which includes a multi-layer filter-condensing element combination.

8. A detector as in claim 5 where the condenser element comprises a metal member through which the gas passes.

9. A detector as in claim 5 which includes multiple, alternating filters and condensing elements in a gas flow path between the gas entry port and the sensing chamber.

10. A gas detector comprising;  
a housing, the housing having at least one gas entry port;  
a gas sensing chamber;  
a filter to restrict dust from entering the housing;  
at least one condenser positioned at least partially between the filter and the sensing chamber so as to cause water to condense thereon, where the condenser will change the temperature of at least some of the passing gas.

11. A gas detector as in claim 10 where the at least one condenser is formed of one of metal or a non-metal, having good thermal conductivity.

12. A gas detector as in claim 10 where the condenser is perforated to permit gases to pass through it.

13. A gas detector as in claim 10 where the filter substantially reduces air velocity in the chamber relative to air velocities outside of the chamber.

14. A gas detector as in claim 10 wherein the condenser is, at least in part, coated with a surfactant to reduce surface tension to water.

15. A gas detector as in claim 10 where the condenser is coated with a material that promotes condensation.

16. A gas detector as in claim 10 where the condenser is cooled by electric energy.

17. A gas detector as in claim 10 where the condenser is cooled by heat exchange to other structures.

18. A gas detector as in claim 10 which includes a reflective portion which is heated by electrical power.

19. A gas detector as in claim 10 where the condenser includes a material that absorbs water.
20. A gas detector comprising:  
a filter;  
a first condensing element carried adjacent to the cell, the element having openings through which a gas carrying fluid can flow;  
a gas sensing cell, the cell receiving filtered, gas carrying fluid that has passed through the condensing element.
21. A detector as in claim 20 with the element comprising at least one high thermal conductivity member.
22. A detector as in claim 21 which includes a filter, the condensing element and filter are positioned spaced apart on a fluid flow path.
23. A detector as in claim 21 which includes a second condensing element displaced from the first element along a fluid flow path.
24. A detector as in claim 21 where the element comprises a perforated metal member.
25. A detector as in claim 21 where the element comprises a plurality of metal members.
26. A detector as in claim 25 where the metal members are spaced apart along a fluid flow path.
27. A detector as in claim 20 which includes a fluid filter, the condensing element and the filter are spaced apart along a fluid flow path.
28. A detector as in claim 20, the gas sensing cell having at least a fluid flow inlet port.
29. A detector as in claim 28, the openings in the element and the inlet port are spaced apart along a fluid flow path.
30. A detector as in claim 29 which includes a filter in the fluid flow path.
31. A detector as in claim 27 where the cell comprises a reflector.
32. A detector as in claim 31 where the reflector is symmetrical relative to the sensing cell.

33. A detector as in claim 32 where the element comprises a plurality of metal members.

34. A detector as in claim 33 where the element causes water vapor to condense thereon and not on the reflector.

35. A method of sensing a gas in a fluid comprising:  
filtering and reducing the relative humidity of a fluid below a selected dew point; and  
diffusing the reduced humidity fluid through a sensing region.

36. A method as in claim 35 which includes filtering the fluid before reducing the relative humidity.

37. A method as in claim 35 which includes projecting at least one beam of radiant energy across the sensing region.

38. A method as in claim 37 which includes reducing a temperature parameter of the fluid while reducing the relative humidity thereof.

39. A method as in claim 38 which also includes diffusing the reduced humidity fluid through a reference region.

40. A gas detector comprising:  
a gas sensing cell having symmetrical sensing and reference regions, the sensing cell having fluid ingress region symmetrical relative to the regions;

a condenser in a fluid flow path through the fluid ingress region where inflowing, filtered gas flows substantially equally into the regions.

41. A gas detector as in claims 40 which includes a filter for ingressing fluid, the filter reduces fluid flow substantially to diffusion rates.

42. A gas detector as in claim 41 with a filter-condenser stack configured to permit fluid to pass through the ingress region in a direction generally perpendicular to a plane that passes through both regions.

43. A gas detector as in claim 40 which includes at least one reflective element symmetrically disposed relative to the regions.

44. A gas detector as in claims 43 which includes a filter of ingressing fluid, the filter reduces flow substantially to diffusion rates.

45. A gas detector as in claim 44 with a filter-condenser stack configured to permit fluid to pass through the ingress region in a direction generally perpendicular to a plane that passes through both regions.